

## **REMARKS**

Original claims 1-4, 6, 9 and 10 remain in this application. Claims 2-3, 5, 7-8, and 11-14 are hereby canceled without prejudice.

### **Acknowledgement of Election**

Applicant hereby affirms the election of the invention of group I (product claims), original claims 1-3, for consideration in this application. Applicant has canceled claim 14 (group II, process claim) as drawn to a non-elected invention. Review of the inventorship in light of 37 CFR 1.48(b) indicates that no correction of inventorship is required.

Should the product claims be found allowable, rejoinder of the process claim is hereby requested, subject to all of the limitations of the broadest allowed product claim.

### **Claim Rejections – 35 USC 112**

Claim rejections under 35 USC 112 have been addressed as follows:

In claim 1, component c), the term “said particles” has been clarified to indicate that it refers to both sets of titanium dioxide particles and de-HNO<sub>3</sub> particles.

Claim 11 has been canceled.

Claims 4, 6, 9 and 10 have been amended to set forth one range/limitation.

Reconsideration and withdrawal of the rejection is respectfully requested.

### **Claim Rejections – 35 USC §103**

The rejection of claims 1-13 (now claims 1-4, 6, 9 and 10) under 35 U.S.C. 103(a) as being unpatentable over Okusako, et al. (US 2002/0077251) in view of EP 1118385 is respectfully traversed.

Oksako '251 describes a photocatalytic composition comprising anatase titanium dioxide and a metal-containing compound which can be a metal oxide or a basic metal-containing compound. It is noted in para. [0018], line 3, and in para. [0021], line 2, that the metal-containing compound is present on the surface of the titanium oxide, i.e., it is physically attached to the titanium oxide particles.

Beyond that, the basic metal-containing compound can cover all of the surface or a portion of the surface of the titanium oxide.

When the metal-containing compound is a basic metal-containing compound, it can be a metal carbonate, such as magnesium carbonate or calcium carbonate. Although Okusako '251 may teach that the basic metal-containing compound, on the surface of titanium oxide can decompose compounds like hydrogen sulfide and acetic acid (para. [0045], line 6), this does not automatically suggest that nitric acid,  $\text{HNO}_3$ , would also be decomposed. Furthermore, surface treating titanium oxide with a basic metal-containing compound as taught by Okusako '251 would be detrimental to the objective of Applicants' invention, which is getting the titanium oxide evenly dispersed as very small particles into the siloxane composition whereby it will not scatter light. Nitric acid is the final product of the oxidation of the NO and NO<sub>2</sub>. The inclusion of calcium carbonate, magnesium carbonate and mixtures thereof into Applicants' claim defined composition is to convert the nitric acid to calcium, or magnesium, nitrate which would be eluted from the composition during rainfall. The calcium or magnesium carbonate does not have to be in intimate contact with the titanium oxide as taught by Okusako '251.

The Examiner suggests further that Okusako '251 "appears to teach" an overlapping range for the amount of metal-containing compound in the composition, arguably creating a prima facie case of obviousness. An overlapping range is irrelevant because Okusako '251 also teaches that the basic metal-containing compound must be attached to the surface of the titanium oxide, which would render Applicants' composition ineffective.

Furthermore, Okusako '251 does not teach the "particle size" of the photocatalytic particles, and it does not teach a silicon containing compound, or the concentration of photocatalytic and de- $\text{HNO}_3$  particles in the coating composition. The Examiner relies on EP '385 to fill the gaps in the Okusako '251 teaching, but EP '385 does not relate to the composition of the instant invention, and its combination with Okusako '251 to support the instant rejection is objected to.

EP '385 relates to a method and apparatus for producing functional materials, e.g., building materials, such as tiles, cement extruded boards, ceramic boards, and the like. The surface of the functional material is coated with a photocatalyst coating composition and then rapidly heated to an elevated temperature in the range of from 100 to 800°C which would destroy the instantly claimed composition. Heating according to EP '385 is needed to thermally decompose the siloxane to silica and thereby fix the photocatalyst coating composition onto the surface of the functional material. In contrast, the silicon based material in Applicants' composition defined in claim 1 according to the present invention converts to a silicon thin film when dried or cured. Drying is performed by either air drying or heat drying, but not by rapid heating as taught by EP '385, and most certainly not to such a high temperature. Heat drying, as by ultraviolet radiation, for example, is designed to cause polymerization whereby the silicon based material is converted to a silicon thin film, and the photocatalytic particles and the de-HNO<sub>3</sub> particles comprising the composition become entrapped therein.

The EP '385 photocatalyst coating composition undergoes significant changes on heating which is essential for its intended function. Referring to Fig. 2, layer 2a is converted to layer 2b, which is then photoactive. However, the siloxane present in layer 2a (before rapid heating) actually prevents the TiO<sub>2</sub> from being photoactive. On heating, the siloxane is converted to silica which then renders the TiO<sub>2</sub> layer photoactive. Accordingly, one skilled in the art would expect that using a photocatalyst in a siloxane coating composition according to Applicants' invention won't work very well, which it does not until formulated with Ca or Mg carbonate, or a mixture thereof, and optionally other fillers, to control the Pigment Volume Concentration (PVC). At low PVC, little or no activity has been observed in coatings of compositions with siloxanes as the binder. EP '385 may begin with a siloxane coating, but the desired photocatalytic activity isn't obtained until rapid heating converts the siloxane to silica.

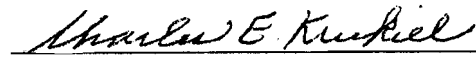
Accordingly, one would not be motivated to incorporate the silicon-containing binder compound as taught in EP '385 into the coating composition

taught in Okusako '251. Reconsideration and withdrawal of the rejection is respectfully requested.

### CONCLUSION

It is believed that the foregoing constitutes a complete response to the Examiner's Action mailed September 16, 2008 and places this application in condition for allowance. Should the Examiner believe that an interview or other action on Applicants' behalf would expedite prosecution of the application, he is urged to contact Applicants' attorney by telephone.

Respectfully submitted,



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